

PATENT ABSTRACTS OF JAPAN

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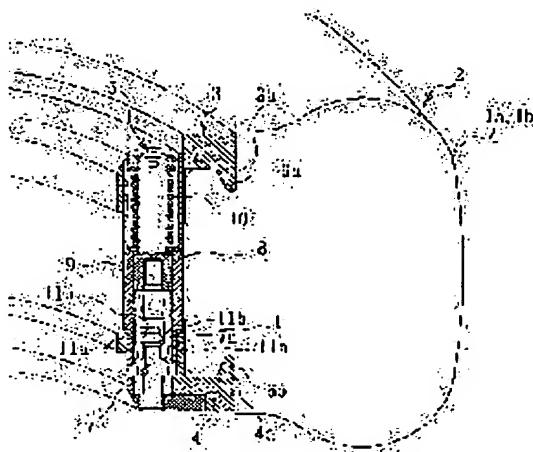
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(54) TIRE MANUFACTURING CORE

(57)Abstract:

PROBLEM TO BE SOLVED: To automate core assembling and disassembling works simply by a small-sized mechanism, to prevent an unexpected decrease in a coupling force of a pair of rings, an unevenness of a coupling force or the like and to prevent a variation in the coupling force of the rings due to the thermal expansion of the core.

SOLUTION: A tire manufacturing core comprises a plurality of segments 1a, 1b, the pair of rings 3, 4 axially engaged from both sides in a combination structure 2 of these segments, and coupling means 5 for coupling the rings at a plurality of positions in a circumferential direction. In this case, each means 5 has a protrusion 7 provided at the one ring 4 and having a large-diameter part 7a at the end, a slide rod 9 sliding therein under the guidance of a sleeve 8 projected from the other ring 3, a coiled spring 10 for urging the rod 9 in a direction separating from the protrusion, and a collet 11 provided at the rod 9 to grip the part 7a.



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CLAIMS

[Claim(s)]

[Claim 1] It multiplies by the combination structure which was made to stick two or more segments and those segments mutually, and was aligned in the shape of a circular ring from the both sides of the direction of an axis of that. It comes to have the ring of the pair which holds two or more segments into a combination posture, and a connection means to link these rings by two or more places of a hoop direction. The projection which each connection means is established by one ring and projects to the ring side of another side and which has a part for a major diameter at a tip, The sliding rod which is guided at the sleeve which projects from the ring of another side to said projection side, and slides in the interior, The core for tire manufacture which it comes to constitute from a spring means to energize this sliding DDO in the direction isolated from said projection, and the collet section which is prepared in a sliding rod and adds a part for the major diameter of said projection.

[Claim 2] The core for tire manufacture according to claim 1 which comes to prepare the slot which permits the negotiations of each ring which make a pair near the inner circumference edge of each segment.

[Claim 3] Claim 1 which it comes to constitute from each elastic piece which divided said collet section to two or more slits which set spacing to a hoop direction and are prolonged in the direction of an axis in the edge part of a cylindrical member, and the acceptance section for said major diameter formed in the inner skin of each elastic piece, or the core for tire manufacture given in 2.

[Claim 4] The core for tire manufacture according to claim 3 which becomes as an elastic return in the diameter expansion direction being possible with the protrusion posture from said sleeve about each elastic piece.

[Claim 5] The core for tire manufacture according to claim 3 which passes through each elastic piece in the diameter reduction direction with the protrusion posture from said sleeve, and becomes as an elastic return being possible.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is used for manufacture of a tire, and it relates to the core for tire manufacture which consists of two or more rigid segments which specify the inner skin of a tire, especially the decomposition attachment structure of that until it results in termination of vulcanization from molding of the Green tire.

[0002]

[Description of the Prior Art] In order to obtain a tire with high roundness, each configuration member of a tire on a rigid core As the manufacture approach of the tire which inserts the Green tire which brought close to the last configuration of a tire enough, cast, and was constituted by this molding into vulcanization mold, and vulcanizes it with a rigid core For example, when there are some which were indicated by JP,7-223275,A and a tire is manufactured with such an approach, it is necessary from the product tire after vulcanization to take out the rigid core.

[0003] Then, while constituting the rigid core of a circular ring configuration from a mutual adhesion posture of two or more segments as indicated by JP,6-28863,B It has a variation rate to the method of the inside of radial of each segment, and the technique which takes them out from a product tire one by one is proposed. To JP,11-34062,A For the purpose of closing mutual conclusion of each above segment, if easy and certain, as shown to drawing 7 and each of 8 in a top view and a sectional view While multiplying the rings 54 and 55 of a pair by the combination structure 53 where each of two or more segments 51 and 52 was aligned in the shape of a circular ring with the mutual adhesion posture from the both sides of the direction of an axis of that The core for tire manufacture which connects both the rings 54 and 55 under screwing with the male screw section 57 prepared in the collar-head sleeve 56 inserted in those inner circumference side and the female screw section 58 prepared in one ring 55 is indicated.

[0004]

[Problem(s) to be Solved by the Invention] however, with the conventional technique concerning the proposal of an applicant's point indicated by JP,11-34062,A It is in the condition that they multiplied [in / especially / link of the rings 54 and 55 of a pair] the flange 59 of the collar-head sleeve 56 of another object by the ring 54 of another side. It is necessary to rotate the male screw section 57 of that over multiple times to one ring 55, and to fasten, and in discharge of the connection Since it is necessary to rotate the male screw section 57, as a result a sleeve 56 over multiple times to one ring 55 to hard flow, connection of the rings 54 and 55 of a pair, and its discharge -- as a result When automating each of attachment of the core for tire manufacture, and decomposition and attaining laborsaving, while an automation device becomes complicated, there is a problem of enlarging. Here The connection force of both the rings 54 and 55, as a result clamping force from making it generate by screwing of the sex compound-screw sections 58 and 57 under the elastic deformation of each part of a configuration When it is easy to cause the fall of the clamping force resulting from the slack of a screw, and also it is in charge of connection of both the rings 54 and 55, for example, only a constant rate rotates a sleeve 56 It was easy to produce dispersion in the clamping force based on the amount of screwing of one ring 55 and a sleeve 56, and there was a problem of changing clamping force by the thermal expansion of the core within vulcanization mold, further.

[0005] The place which this invention makes it a technical problem to solve such a trouble that the conventional technique holds, and is made into the purpose of that That attachment of a core and automation of decomposition are simplified and it can realize with a small device, of course It is in offering the core for tire manufacture which can prevent effectively fluctuation of the ring connection force which fully prevents generating of the unexpected fall of the connection force of both rings, dispersion of the connection force,

etc., and originates in the thermal expansion of a core.

[0006]

[Means for Solving the Problem] While the core for tire manufacture of this invention prepares two or more segments To the combination structure which was made to stick those segments mutually and was aligned in the shape of a circular ring In the place in which a connection means to have prepared the ring of the pair which multiplies from the both sides of the direction of an axis of that, and holds two or more segments into a combination posture, and to link those rings by two or more places of a hoop direction was formed The projection which each connection means is established by one ring and projects to the ring side of another side and which has a part for a major diameter at a tip, The sliding rod which is guided at the sleeve which projects from the ring of another side to said projection side, and slides in the interior, It is prepared in a spring means, for example, coiled spring, to energize this sliding rod in the direction isolated from said projection, and a sliding rod, and constitutes from the collet section which adds a part for the major diameter of said projection. The slot which permits the negotiations of each ring which make a pair near the circumferential circle of each segment is prepared preferably here.

[0007] Under the condition of having multiplied one ring by the combination structure of the segment aligned in the shape of a circular ring by plane view from that inferior-surface-of-tongue side with this core for tire manufacture, for example, and having held each segment into the combination posture The ring of another side under the compression set of coiled spring based on an operation of a pusher etc. While making the amount of [of the projection which was made to carry out the downward variation rate of the collet section of a sliding rod as a posture made to project according to necessary to the lower part side of a sleeve, and prepared it in one ring] major diameter enter into the collet circles Free expanding of coiled spring is brought about with a variation rate. ring itself of another side is multiplied by the top-face side of the combination structure of a segment -- making -- the rise of after that, a pusher, etc. -- by this The collet section is drawn into a sleeve according to the spring force of coiled spring. While adding a part for the major diameter of a projection with the collet section, by escaping from and carrying out the stop of the part for the major diameter It can connect simply and easy moreover always certainly, without carrying out the rotation drive of any member, without using the special connection means which becomes another object structure about the ring of a pair.

[0008] And if it is in this connection condition, as long as the fixed tensile force specified as a sliding rod and each of a projection according to the expanding force of coiled spring acts and this tensile force has both rings in a connection condition, it does not change, and it does not change with connection of both rings of when.

[0009] Discharge of connection which the ring which makes a pair mentioned above on the other hand Making the collet section of a sliding rod project again to the lower part side of a sleeve, releasing a part for the major diameter of a projection from constraint by the collet section, and maintaining the protrusion condition of the collet section after that by pushing of a pusher etc. carrying out the rise variation rate of the ring of another side -- it can carry out -- this case -- descent of one ring -- the combination structure of a segment can be made into a perfect free condition by also combining a variation rate and making it perform.

[0010] In this way, according to this core, dispersion in that connection force besides attachment of a core and each automation of decomposition, and the unexpected fall of the connection force of a ring that a pusher style etc. can simplify connection of the ring of a pair and automation of dissociation, and can be easily realized with a small device, and makes a pair especially can fully be prevented.

[0011] And the connection force of both rings is uniformly maintainable on parenchyma with heating of the core within vulcanization mold here by constituting a connection means and a segment from same ingredient, and making equal these both coefficients of linear thermal expansion.

[0012] In such a core, each of a ring which makes a pair in by the way, the location which does not become hindrance near the inner circumference edge of a segment, such as molding of a tire When it is made to multiply by the slot established in the segment, there is an advantage to which the heat capacity of a ring is small made, and centering within vulcanization mold can be closed if under a small ring outer diameter as well as the ability to remove both the rings from a vulcanized tire smoothly and easily.

[0013] In addition, each elastic piece divided to two or more slits which the collet section in here is the edge part of a cylindrical member, and set spacing to a hoop direction and are prolonged in the direction of an axis, It is desirable to constitute from the acceptance section for said major diameter formed in the inner skin of each elastic piece, and to make the release for the major diameter added to the acceptance section or the add lump for a major diameter [the acceptance section] perform based on the elastic deformation of each elastic piece.

[0014] This accumulates, and, in the case of the former, the elastic return of each elastic piece in the diameter expansion direction is enabled with the protrusion posture from a sleeve, and, in the case of the latter, the elastic return of each elastic piece is enabled in the diameter reduction direction with the protrusion posture from a sleeve.

[0015] If it is in the elastic piece which carries out an elastic return in the diameter expansion direction here The add lump by the acceptance section for a projection major diameter is in the condition of having made the amount of the major diameter entering to an acceptance section location under diameter expansion of an elastic piece. The collet section can be drawn into a sleeve, it can carry out by carrying out forcible deformation of each elastic piece in the diameter reduction direction, and release for the major diameter can be immediately performed with making the collet section project from a sleeve.

[0016] On the other hand, the add lump for a major diameter by the elastic piece which carries out an elastic return in the diameter reduction direction While bringing about and stuffing compulsory extension deformation of the elastic piece according a part for a projection major diameter to a part for the major diameter into between each elastic piece which projects from a sleeve and is in a diameter reduction condition Drawing in into the sleeve of those elastic pieces can perform by restraining unexpected extension deformation of an elastic piece. The release for a major diameter from an elastic piece Where an elastic piece is made to project from a sleeve, a part for a major diameter can be performed by drawing out from the acceptance section, forcing deformation of the diameter expansion direction of those elastic pieces.

[0017]

[Embodiment of the Invention] Based on the place which shows the gestalt of implementation of this invention to a drawing, it explains below. Drawing 1 is the cross-section perspective view showing the gestalt of implementation of this invention, and drawing 2 is the important section enlarged drawing of drawing 1.

[0018] The core for tire manufacture shown here is multiplied by the combination structure 2 which was made to stick a total of ten segments 1a and 1b and those segments 1a and 1b mutually, was aligned in the shape of a circular ring, and has been arranged from the both sides of the direction of an axis of that. It has the rings 3 and 4 of the pair which holds those segments 1a and 1b into a combination posture, and a connection means 5 to link these rings 3 and 4 by two or more places of a hoop direction, for example, three places.

[0019] Here, segment 1a is the plane view of the combination structure 2, and it is the narrow-width segment which width of face dwindle towards the method of the outside of radial, and segment 1b is a double width segment which width of face increases gradually towards the method of the outside of radial, and the combination structure 2 arranges every five pieces of those by turns, and comes to form them in the shape of a circular ring. The variation rate of the decomposition of that at the time of forming the combination structure 2 in this way can be carried out to an upper part [of drawing], or lower part side through the central space section, it can be removed, and can be performed by removing each of 1b similarly by the double width segment after removal of all narrow-width segment 1a while drawing each of for example, narrow-width segment 1a out to the method of the inside of radial.

[0020] On the other hand, the alignment to the circular ring configuration of the segments 1a and 1b of a decomposition condition Each of narrow-width segment 1a in for example, the condition of having arranged in the hoop direction and radial predetermined location Each double width segment 1b is arranged from a predetermined location to the method of the outside of radial among narrow-width segment 1a. After that, the variation rate of all of each double width segment 1b can be carried out to coincidence to the method of the inside of radial, and it can carry out by contacting densely the both-sides side of each double width segment 1b to each narrow-width segment 1a. In addition, the total of the segments 1a and 1b which form such a combination structure 2 can be made to fluctuate suitably according to necessary.

[0021] Here moreover, negotiations of the rings 3 and 4 of the pair to the combination structure 2 of Segments 1a and 1b To **** 6a and 6b of the shape of radii which the location near the circumferential circle of that was made to follow a hoop direction, and was prepared in it on vertical both sides of each segments 1a and 1b Being able to carry out by inserting in the protruding lines 3a and 4a annularly formed over the perimeter of rings 3 and 4, each segment 1a and 1b of the combination structure 2 has migration to radial restrained by such negotiations of one [at least] ring.

[0022] Furthermore, it is supposed that both the rings 3 and 4 that make a pair will be connected with the connection means 5 here in order to fully restrain each segment 1a and 1b also to the variation rate of the direction of an axis of the combination structure 2. When shown in drawing, it projects from there upwards to the lower ring 4, and the projection 7 which has major diameter part 7a is formed at a tip in order to close

discharge of link of both the rings 3 and 4, and its connection, if easy and certain. And on the other hand Form the sleeve 8 which projects from there to a lower part to the upper ring 3, and in this sleeve, show around at it and the sliding rod 9 in which sliding displacement is possible is arranged in the direction of an axis of a sleeve 8. While ****(ing) this sliding rod 9 upward with the coiled spring 10 arranged around the sliding rod 9 in a spring means and drawing, the collet section 11 which adds major diameter part 7a of projection 7 to the lower limit section of this sliding rod 9 is formed.

[0023] Each elastic piece 11a divided to two or more slits which this collet section 11 in here is the lower limit part of a cylindrical member, and set spacing to a hoop direction and are prolonged in the direction of an axis, It consists of acceptance section 11b of major diameter part 7a formed in the inner skin of each elastic piece 11a, and each elastic piece 7a divided by doing in this way carries out an elastic return in the diameter expansion direction with the protrusion posture from a sleeve 8 to the lower part.

[0024] The connection means 5 will be constituted in this way by the collet section 11 prepared at the tip at the lower limit section of the projection 7 which has major diameter part 7a, the sliding rod 9 which carries out sliding displacement within a sleeve 8, and this sliding rod 9 here.

[0025] In link of the rings 3 and 4 of the pair by this connection means 5 Have a pusher etc., as shown in drawing 3, resist and carry out the downward variation rate of the sliding rod 9 to the spring force of coiled spring 10, and each elastic piece 11a of the collet section 11 is made to project to the lower part side of a sleeve 8. By this Major diameter part 7a of projection 7 can be made to enter smoothly and certainly to the inner circumference side of elastic piece 11a by multiplying the upper ring 3 by the combination structure 2, where diameter expansion deformation of each elastic piece 11a is carried out. And by making a pusher etc. isolate from the sliding rod 9 after that, based on the spring force of coiled spring 10, the rise variation rate of the sliding rod 9 is carried out, and it is drawing each elastic piece 11a into a sleeve 8 by this. projection major diameter part 7a carry out diameter reduction deformation of those elastic piece 11a of a diameter expansion condition under an operation of sleeve inner skin, and according to acceptance section 11b is firm -- it adds, ** is also hung down and these realize link of both the rings 3 and 4.

[0026] If it adds and is in a lump condition, the sliding rod 9 and each of projection 7 receive such fixed tensile force based on the stability of coiled spring 10 of major diameter part 7a by elastic piece acceptance section 11b here, both the rings 3 and 4 will draw near and the tensile force will act as the force or connection force. Therefore, as long as it adds and a lump condition is maintained, the starting thing which the unexpected fall of the ring connection force produces is there being nothing, and predetermined always adding link of both the rings 3 and 4, and realizing with a lump condition, and dispersion does not produce it in the ring connection force here. And based on such selection of the quality of the material which was previously described if it added and was in the lump condition, fluctuation of the ring connection force resulting from the thermal expansion of a core can fully be prevented.

[0027] On the other hand, discharge of each ring 3 and connection of four As it has the pusher which does not illustrate this, either in the state of those connection as shown in drawing 2, and the downward variation rate of the sliding rod 9 is carried out and it is shown in drawing 3 in connection with this, each elastic piece 11a of the collet section 11 While making it project under the sleeve 8, it can carry out by making the elastic return of them change into a diameter expansion condition. therefore, after that -- for example, descent of the sliding rod 9 -- a variation rate -- the combination structure 2 can be completely released from constraint by rings 3 and 4 by making rings 3 and 4 isolate from the combination structure 2, with a condition maintained.

[0028] In this way, according to this core, link of rings 3 and 4 which only reciprocates and which makes a pair only by making it small and using an easy pusher style etc., and discharge of that can be ensured [smoothly and].

[0029] Drawing 4 is an approximate line sectional view which illustrates the equipment with which the above link of each ring 3 and 4 which makes a pair, and automation of discharge of that can be presented, and 21 in drawing shows a holder. This holder 21 like [when holding core itself directly] illustration The core by which endocyst was carried out to the vulcanized tire T is applicable to all in the case of holding indirectly. This holder 21 While supporting a core from the bottom, according to necessary, attitude displacement can be carried out in the direction which can function that the peripheral surface should be held, and can rotate preferably according to necessary around a medial-axis line, and intersects perpendicularly with the space of drawing 4 under an operation of the direct-acting guide 22. Moreover, the ring holder to which 24 performs grasping and support of the bottom ring 4 for a ring migration means by which 23 in drawing carries out lifting-and-holding conveyance of the top ring 3 is shown, respectively.

[0030] from the pusher 26 with which the attitude drive of the ring migration means 23 is carried out in a

cylinder 25 and it here -- becoming -- descent of said sliding rod 9, while equipping two or more places of a hoop direction with the pusher device section which brings about a variation rate Two or more places of a hoop direction are equipped with the support device section which consists of other cylinders 27 and a rocking pawl 28 about which a rocking variation rate is carried out in it, and it negotiates with the inferior surface of tongue of the top ring 3. Moreover, the ring holder 24 Under engagement with the buttress plate 30 in which a rise-and-fall variation rate is carried out by the cylinder 29, the pinion 31 by which is arranged on this buttress plate and motorised is carried out by central **** of a ring 4, and this pinion 31 A point is equipped with the ring grasping pawl 32 by which a rotation variation rate is carried out between the location concerning a ring 4, and the location from which it separates as level higher than the thickness of a ring 4 shows to drawing 5.

[0031] In removing both up-and-down rings from the core in an attachment condition with such equipment While dropping the ring migration means 23, multiplying the rocking pawl 28 by the inferior surface of tongue of a ring 3 and enabling support of the ring 3 by the rocking pawl 28 so that it may give drawing 4 While carrying out the rise variation rate of the buttress plate 30 of a ring holder 24 to the continuous-line location of drawing, it has a pinion 31 and let the grasping pawl 32 be the continuous-line posture of drawing 5 in which it projects to up to the top face of a ring 4.

[0032] The advance variation rate of the pusher 26 is carried out in the cylinder 25 of the ring migration means 23. Subsequently, by stiffness the spring force of a coil spring 10 is resisted, the sliding rod 9 was dropped to it, and it stated previously -- as -- the collet section 11 -- as a result The protrusion to the lower part of a sleeve 8 of elastic piece 11a of that is brought about, diameter expansion deformation of each elastic piece 11a is carried out based on this, and connection of both the rings 3 and 4 is canceled by releasing major diameter part 7a of projection 7 from acceptance section 11b of that.

[0033] Maintaining the advance posture of a pusher 26, negotiations with the segment combination structure 2 are solved, and each ring 3 and 4 is made to fully isolate mutually after that by carrying out the rise variation rate of the ring 3, combining it with the rocking pawl 28, and carrying out the downward variation rate of the ring 4 with a buttress plate 30. Thus, each ring 3 and 4 separated mutually is conveyed in a necessary location, or is handed over by the necessary device section, and stands by ex post link for the second time.

[0034] Therefore, the combination structure 2 which remains to a holder 21 after that has the ejection of every a piece by the side of the extracts to the method of the inside of radial [according to necessary / of each segment 1a and 1b] and each of those upper part, or a lower part, and is decomposed and taken out from the vulcanized tire T.

[0035] on the other hand, in bringing about link of both the rings 3 and 4 with the equipment of illustration As opposed to the combination structure 2 which each segment 1a and 1b was aligned beforehand, and has arranged it, the ring 4 of the bottom grasped and supported by the ring holder 24 in the condition of having made it multiplying by drawing from the inferior-surface-of-tongue side of that as a continuous line shows The top ring 3 supported with the ring migration means 23 under advance of a pusher 26 While multiplying the ring 3 by the combination structure 2 from the top-face side by carrying out a downward variation rate with the posture in which the collet section 11 was made to project to the lower part side of a sleeve 8 The enter lump by the collet section 11 of projection major diameter part 7a prepared in the bottom ring 4 is brought about. Subsequently A pusher 26 is retreated, by drawing the collet section 11 of the sliding rod 9 into a sleeve 8 according to the spring force of coiled spring 10, an add lump of projection major diameter part 7a by elastic piece acceptance section 11b is brought about, and both the rings 3 and 4 are linked.

[0036] After connecting the rings 3 and 4 of a pair in this way, the core which had link of rings 3 and 4 and completed attachment by making each of the ring migration means 23 and a ring holder 24 isolate from those rings 3 and 4 is transportable to a necessary position in readiness or a necessary operating location.

[0037] According to this core fabric, attachment of a core and decomposition in this way, respectively especially Connection and dissociation of rings 3 and 4 can be simplified, and can automate with a small device, and also as mentioned above Fluctuation of the ring connection force which can fully prevent generating of the unexpected fall of the connection force of the rings 3 and 4 of a pair, dispersion of the connection force, etc., and originates in the thermal expansion of a core can be prevented advantageously.

[0038] By the way, although the elastic return of the elastic piece 11a of the collet section 11 shall be carried out in the diameter expansion direction in connection with their projecting from a sleeve 8 when stated above Can carry out the elastic return of each elastic piece 11a in the diameter reduction direction regardless of the mutual posture over a sleeve 8, and according to this elastic piece 11a which is in a diameter reduction condition with the protrusion posture from a sleeve 8 as shown in drawing 6 (a) -- descent of the

top ring 3, while carrying out diameter expansion deformation compulsorily with projection major diameter part 7a in connection with a variation rate, as shown in drawing 6 (b). When major diameter part 7a reaches acceptance section 11b by the further descent of a ring 3, the diameter reduction return of elastic piece 11a for the second time is brought about. After that With the diameter reduction condition maintained, elastic piece 11a can be drawn into a sleeve 8, as shown in drawing 6 (c), both rings can make it smooth by restraining unexpected diameter expansion deformation of elastic piece 11a, and positive link can be realized.

[0039] On the other hand, discharge of this link can be performed by drawing out major diameter part 7a in acceptance section 11b from there under the protrusion from the sleeve 8 of elastic piece 11a through compulsive deformation as shown in drawing 6 (b) of that elastic piece 11a, and the same operation effectiveness as the case of the point can be brought about also by it.

[0040]

[Effect of the Invention] According to this invention, so that clearly from the place described above Attachment and decomposition of a core, Especially, link of the ring of a pair and automation of dissociation can be simplified, and it can realize with a small device. And generating of dispersion for every connection of the unexpected fall of the connection force of both rings and its connection force etc. can fully be prevented, it can combine and fluctuation of the ring connection force resulting from the thermal expansion of a core can be prevented effectively.

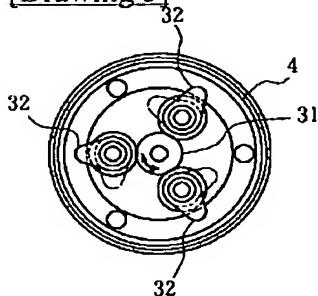
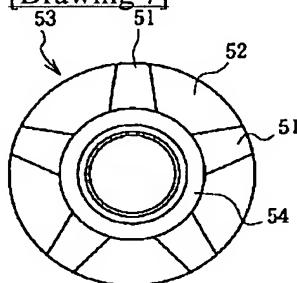
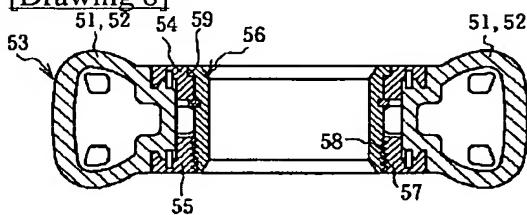
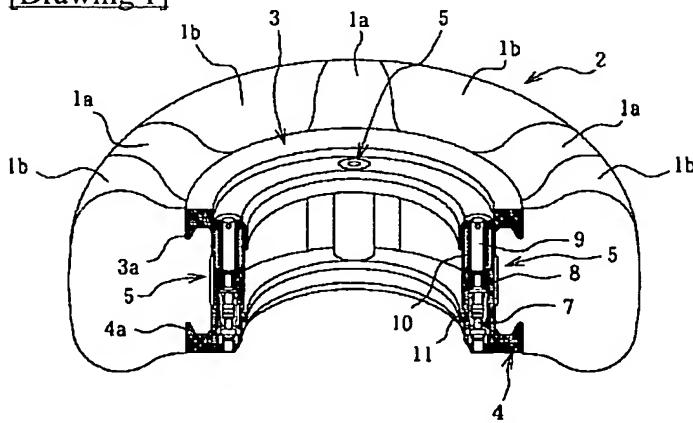
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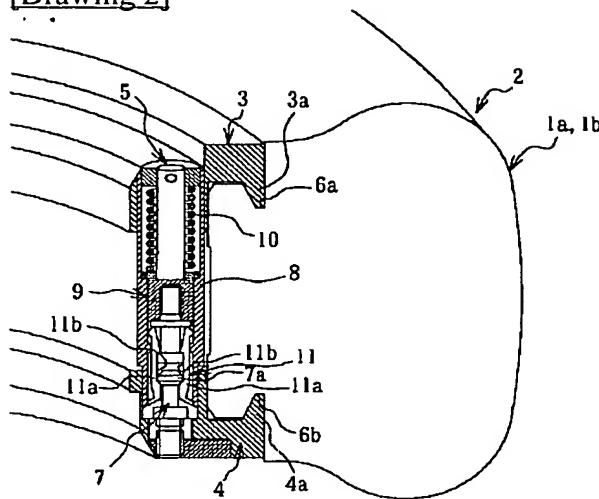
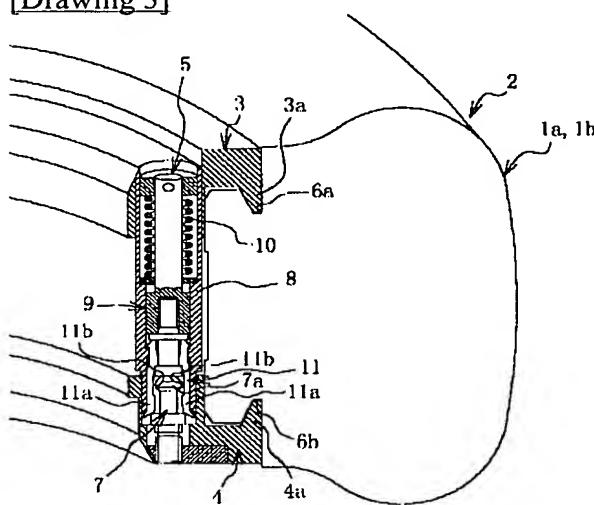
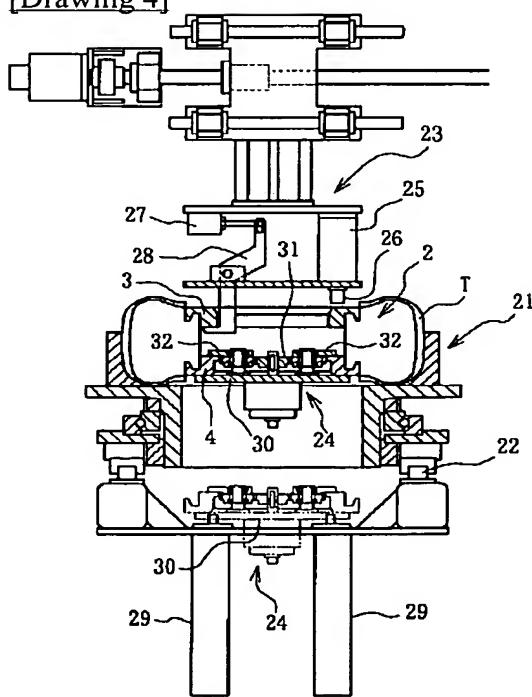
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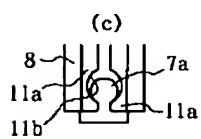
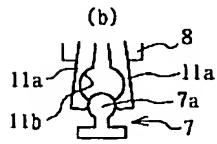
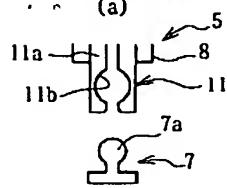
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DRAWINGS

[Drawing 5]**[Drawing 7]****[Drawing 8]****[Drawing 1]**

[Drawing 2]**[Drawing 3]****[Drawing 4]**

[Drawing 6]

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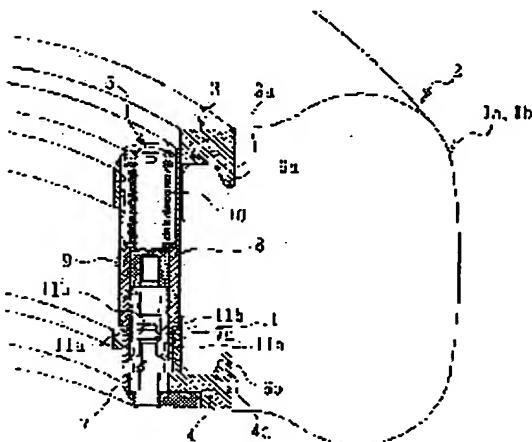
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(54) TIRE MANUFACTURING CORE

(57)Abstract:

PROBLEM TO BE SOLVED: To automate core assembling and disassembling works simply by a small-sized mechanism, to prevent an unexpected decrease in a coupling force of a pair of rings, an unevenness of a coupling force or the like and to prevent a variation in the coupling force of the rings due to the thermal expansion of the core.

SOLUTION: A tire manufacturing core comprises a plurality of segments 1a, 1b, the pair of rings 3, 4 axially engaged from both sides in a combination structure 2 of these segments, and coupling means 5 for coupling the rings at a plurality of positions in a circumferential direction. In this case, each means 5 has a protrusion 7 provided at the one ring 4 and having a large-diameter part 7a at the end, a slide rod 9 sliding therein under the guidance of a sleeve 8 projected from the other ring 3, a coiled spring 10 for urging the rod 9 in a direction separating from the protrusion, and a collet 11 provided at the rod 9 to grip the part 7a.



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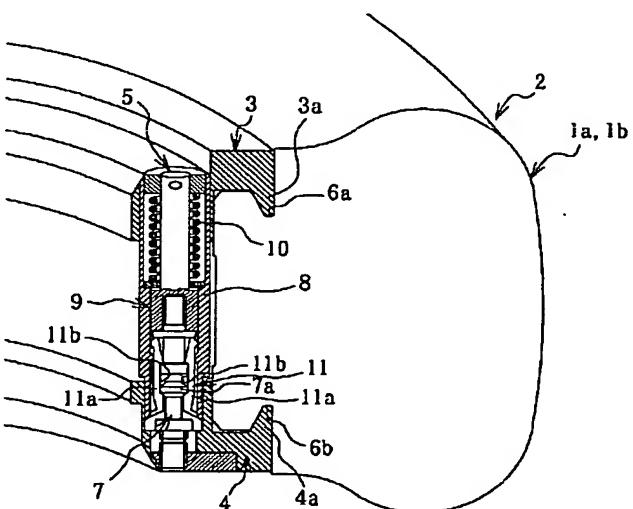
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(54)【発明の名称】 タイヤ製造用コア

(57)【要約】

【課題】 コアの組付けおよび分解作業の自動化を、簡単に小型の機構をもって可能とし、併せて、対をなすリングの連結力の不測の低下、連結力のばらつき等の発生を防止し、またコアの熱膨張に起因するリング連結力の変動を防止する。

【解決手段】 複数個のセグメント1a, 1bと、これらのセグメントの組合わせ構体2に、その軸線方向の両側から掛合する一対のリング3, 4と、これらのリングを周方向の複数個所で相互連結する連結手段5とを備えてなり、各連結手段5を、一方のリング4に設けられて、先端に大径部分7aを有する突起7と、他方のリング3から突出するスリープ8に案内されてその内部で摺動する摺動ロッド9と、この摺動ロッド9を、前記突起部から離隔する方向へ付勢するコイルばね10と、摺動ロッド9に設けられて、前記大径部分7aをくわえ込むコレット部11で構成してなる。



【特許請求の範囲】

【請求項1】複数個のセグメントと、それらのセグメントを相互に密着させて円環状に整列させた組合せ構体に、その軸線方向の両側から掛合して、複数個のセグメントを組合せ姿勢に保持する一対のリングと、これらのリングを周方向の複数箇所で相互連結する連結手段とを具えてなり。

各連結手段を、一方のリングに設けられて他方のリング側へ突出する、先端に大径部分を有する突起と、他方のリングから前記突起側へ突出するスリーブに案内されてその内部で摺動する摺動ロッドと、この摺動ロッドを、前記突起から離隔する方向へ付勢するばね手段と、摺動ロッドに設けられて、前記突起の大径部分をくわえ込むコレット部とで構成してなるタイヤ製造用コア。

【請求項2】各セグメントの内周縁近傍に、対をなすそれぞれのリングの掛けを許容する溝部を設けてなる請求項1に記載のタイヤ製造用コア。

【請求項3】前記コレット部を、円筒状部材の端部分で、周方向に間隔をおいて軸線方向に延びる複数本のスリットで区画したそれぞれの弹性片と、各弹性片の内周面に形成した、前記大径部分の受容部とで構成してなる請求項1もしくは2に記載のタイヤ製造用コア。

【請求項4】それぞれの弹性片を、前記スリーブからの突出姿勢で拡径方向へ弹性復帰可能としてなる請求項3に記載のタイヤ製造用コア。

【請求項5】それぞれの弹性片を、前記スリーブからの突出姿勢で縮径方向へ弹性復帰可能としてなる請求項3に記載のタイヤ製造用コア。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、タイヤの製造に用いられて、グリーンタイヤの成型から加硫の終了に至るまでタイヤの内周面を規定する、複数個の剛性セグメントからなるタイヤ製造用コア、とくにはその分解組付け構造に関するものである。

【0002】

【従来の技術】真円度の高いタイヤを得るために、タイヤのそれぞれの構成部材を剛性コア上で、タイヤの最終形状に十分近付けて成型し、この成型によって構成されたグリーンタイヤを剛性コアとともに加硫モールド内に挿入して加硫するタイヤの製造方法としては、たとえば、特開平7-223275号公報に開示されたものがあり、このような方法をもってタイヤを製造した場合には、加硫後の製品タイヤから、その剛性コアを取り出すことが必要になる。

【0003】そこで、特公平6-28863号公報に開示されているように、複数個のセグメントの相互の密着姿勢で円環形状の剛性コアを構成するとともに、それぞれのセグメントの半径方向内方への変位をもって、それらを製品タイヤから順次に取り出す技術が提案されてお

り、また、特開平11-34062号公報には、上述のようなそれぞれのセグメントの相互の締結を簡単かつ確実ならしめることを目的に、図7および8のそれぞれに平面図および断面図で示すように、複数個のセグメント51、52のそれぞれを、相互の密着姿勢で円環状に整列させた組合せ構体53に、その軸線方向の両側から一対のリング54、55を掛けさせるとともに、両リング54、55を、それらの内周側に嵌め込んだフランジ付きスリーブ56に設けた雄ねじ部57と、一方のリング55に設けた雌ねじ部58との螺合下で連結するタイヤ製造用コアが開示されている。

【0004】

【発明が解決しようとする課題】しかるに、出願人の先の提案に係る、特開平11-34062号公報に開示された従来技術では、とくに、一対のリング54、55の相互連結に当たり、それらとは別体のフランジ付きスリーブ56のフランジ59を他方のリング54に掛けさせた状態で、それの雄ねじ部57を一方のリング55に対して複数回にわたって回転させて締め込むことが必要になり、その連結の解除に当たっては、雄ねじ部57、ひいては、スリーブ56を、一方のリング55に対して逆方向へ複数回にわたって回転させることが必要になるため、一対のリング54、55の連結およびその解除、ひいては、タイヤ製造用コアの組付けおよび分解作業のそれを自動化して省力化を図る場合に、自動化機構が複雑になるとともに、大型化するという問題があり、またここでは、両リング54、55の連結力、ひいては、締付力を、構成各部の弹性変形下での雌雄両ねじ部58、57の螺合によって発生させていることから、ネジの弛みに起因する締付力の低下をきたし易い他、両リング54、55の連結に当たって、たとえば、スリーブ56を一定量だけ回転させる場合には、一方のリング55とスリーブ56との螺合量に基づくその締付力にばらつきを生じ易く、さらには、加硫モールド内のコアの熱膨張によって締付力が変動するという問題があった。

【0005】この発明は、従来技術が抱えるこのような問題点を解決することを課題とするものであり、その目的とするところは、コアの組付けおよび分解作業の自動化を、簡単にして小型の機構をもって実現できることはもちろん、両リングの連結力の不測の低下、その連結力のばらつき等の発生を十分に防止し、また、コアの熱膨張に起因するリング連結力の変動を有效地に防止できるタイヤ製造用コアを提供するにある。

【0006】

【課題を解決するための手段】この発明のタイヤ製造用コアは、複数個のセグメントを設けるとともに、それらのセグメントを相互に密着させて円環状に整列させた組合せ構体に、その軸線方向の両側から掛けして複数個のセグメントを組合せ姿勢に保持する一対のリングを設け、また、それらのリングを周方向の複数箇所で相

互連結する連結手段を設けたところにおいて、各連結手段を、一方のリングに設けられて他方のリング側へ突出する、先端に大径部分を有する突起と、他方のリングから前記突起側へ突出するスリーブに案内されてその内部で摺動する摺動ロッドと、この摺動ロッドを、前記突起から離隔する方向へ付勢するばね手段、たとえばコイルばねと、摺動ロッドに設けられて、前記突起の大径部分をくわえ込むコレット部とで構成したものである。ここで好ましくは、各セグメントの内周円近傍に、対をなすそれぞれのリングの掛けを許容する溝部を設ける。

【0007】このタイヤ製造用コアでは、たとえば、平面視で円環状に整列させたセグメントの組合せ構体に、その下面側から一方のリングを掛けさせてそれぞれのセグメントを組合せ姿勢に保持した状態の下で、他方のリングを、プッシャ等の作用に基づく、コイルばねの圧縮変形下で、摺動ロッドのコレット部を、スリーブの下方側へ所要に応じて突出させた姿勢として下降変位させて、一方のリングに設けた突起の大径部分をそのコレット部内に入り込ませるとともに、他方のリングそれ自体を、セグメントの組合せ構体の上面側に掛けさせ、その後、プッシャ等の上昇変位によってコイルばねの自由伸長をもたらし、これによって、コレット部をコイルばねのね力に応じてスリーブ内へ引き込んで、そのコレット部をもって突起の大径部分をくわえ込むとともに、その大径部分を抜け止めすることにより、一対のリングを、別体構造になる特別の連結手段等を用いることなしに、また、いずれの部材をも回転駆動させることなく、簡単かつ容易に、しかも常に確実に連結することができる。

【0008】そしてこの連結状態にあっては、摺動ロッドおよび突起のそれぞれに、コイルばねの伸長力によって特定される一定の引張力が作用し、この引張力は、両リングが連結状態にある限り変化することがなく、また、両リングの何時の連結によっても変化することができない。

【0009】この一方で、対をなすリングの、上述したような連結の解除は、プッシャ等の押し込みによって、摺動ロッドのコレット部をスリーブの下方側へ再び突出させて、突起の大径部分をコレット部による拘束から解放し、その後、コレット部の突出状態を維持しつつ、他方のリングを上昇変位させることにより行うことができ、この場合、一方のリングの下降変位をも併せて行わせることで、セグメントの組合せ構体を、完全な自由状態とすることができます。

【0010】かくして、このコアによれば、コアの組付けおよび分解作業のそれぞれの自動化、とくには、一対のリングの連結および解離の自動化を、プッシャ機構等の簡単にして小型の機構をもって容易に実現することができ、また、対をなすリングの連結力の不測の低下の他、その連結力のばらつきを十分に防止することができ

る。

【0011】しかもここでは、連結手段とセグメントとを同一の材料にて構成して、それら両者の線熱膨張率を等しくすることで、加硫モールド内でのコアの加熱によってもまた、両リングの連結力を実質上一定に維持することができる。

【0012】ところで、このようなコアにおいて、対をなすリングのそれを、セグメントの内周縁近傍の、タイヤの成型等の妨げにならない位置で、セグメントに設けた溝部に掛けさせた場合には、小さなリング外径の下で、加硫済みタイヤからの両リングの取外しを円滑かつ容易に行い得ることはもちろん、リングの熱容量を小さくでき、また、加硫モールド内でのセンタリングを容易ならしめ得る利点がある。

【0013】なお、ここにおけるコレット部は、円筒状部材の端部分で、周方向に間隔をおいて軸線方向に延びる複数本のスリットで区画したそれぞれの弾性片と、各弾性片の内周面に形成した、前記大径部分の受容部とで構成して、各弾性片の弾性変形に基いて、受容部にくわえた大径部分の解放、または、その受容部への大径部分のくわえ込みを行わせることが好ましい。

【0014】これがため、前者の場合には、それぞれの弾性片を、スリーブからの突出姿勢で拡径方向へ弾性復帰可能とし、また後者の場合には、それぞれの弾性片を、スリーブからの突出姿勢で縮径方向へ弾性復帰可能とする。

【0015】ここで、拡径方向へ弾性復帰する弾性片にあっては、突起大径部分の、受容部へのくわえ込みは、弾性片の拡径下で、受容部位置へその大径部分を入り込ませた状態で、コレット部をスリーブ内へ引き込んで、それぞれの弾性片を縮径方向へ強制変形されることにより行うことができ、その大径部分の解放は、コレット部をスリーブから突出させることをもって直ちに行うことができる。

【0016】一方、縮径方向へ弾性復帰する弾性片による大径部分のくわえ込みは、スリーブから突出して縮径状態にあるそれぞれの弾性片間へ、突起大径部分を、その大径部分による弾性片の強制的な拡開変形をもたらして押し込むとともに、これらの弾性片の、スリーブ内への引き込みによって、弾性片の不測の拡開変形を拘束することにより行うことができ、弾性片からの大径部分の解放は、弾性片をスリーブから突出させた状態で、これらの弾性片の拡径方向の変形を強制しながら、大径部分を、受容部から引き抜くことにより行うことができる。

【0017】

【発明の実施の形態】以下にこの発明の実施の形態を図面に示すところに基いて説明する。図1はこの発明の実施の形態を示す断面斜視図であり、図2は、図1の要部拡大図である。

【0018】ここに示すタイヤ製造用コアは、総計十個

のセグメント1a, 1bとそれらのセグメント1a, 1bを相互に密着させて円環状に整列させて配置した組合せ構体2に、その軸線方向の両側から掛合して、それらのセグメント1a, 1bを組合せ姿勢に保持する一対のリング3, 4と、これらのリング3, 4を周方向の複数個所、たとえば三箇所で相互連結する連結手段5とを具える。

【0019】ここで、セグメント1aは、組合せ構体2の平面視で、半径方向外方に向けて幅が漸減する狭幅セグメントであり、またセグメント1bは、半径方向外方に向けて幅が漸増する広幅セグメントであり、そして組合せ構体2は、それらの五個ずつを交互に配置して円環状に形成してなる。組合せ構体2をこのように形成した場合におけるその分解は、たとえば、狭幅セグメント1aのそれを、半径方向内方へ引き抜くとともに、中央の空間部を経て図の上方側もしくは下方側へ変位させて取り外し、そして、全ての狭幅セグメント1aの取り外しの後に、広幅セグメント1bのそれを同様にして取り外すことにより行うことができる。

【0020】この一方で、分解状態のセグメント1a, 1bの、円環形状への整列は、たとえば、狭幅セグメント1aのそれを、周方向および半径方向の所定位置に配置した状態で、それぞれの広幅セグメント1bを、狭幅セグメント1a間で、所定位置より半径方向外方に配置し、その後に、それぞれの広幅セグメント1bの全てを半径方向内方へ同時に変位させて、各広幅セグメント1bの両側面をそれぞれの狭幅セグメント1aに密に接触させることによって行うことができる。なお、このような組合せ構体2を形成するセグメント1a, 1bの総数は、所要に応じて適宜に増減させることができる。

【0021】またここで、セグメント1a, 1bの組合せ構体2への一対のリング3, 4の掛けは、各セグメント1a, 1bの上下両側で、それの内周円近傍位置に周方向に連続させて設けた円弧状の条溝6a, 6bに、リング3, 4の全周にわたって環状に形成した突条3a, 4aを嵌め込むことにより行うことができ、組合せ構体2の、それぞれのセグメント1a, 1bは、少なくとも一方のリングのこのような掛けによって半径方向への移動を拘束されることになる。

【0022】さらにここでは、組合せ構体2の軸線方向の変位に対してもそれぞれのセグメント1a, 1bを十分に拘束するべく、対をなすリング3, 4の相互を連結手段5をもって連結することとしている。しかも、図に示すところでは、両リング3, 4の相互連結およびその連結の解除を簡単かつ確実ならしめるべく、下側のリング4に、そこから上方へ突出して、先端に大径部分7aを有する突起7を設け、この一方で、上側のリング3に、そこから下方へ突出するスリープ8を設けて、このスリープ内に、それに案内されてスリープ8の軸線方向

へ摺動変位可能な摺動ロッド9を配設し、そして、この摺動ロッド9を、ばね手段、図では摺動ロッド9の周りに配置したコイルばね10をもって上向きに附着するとともに、この摺動ロッド9の下端部に、突起7の大径部分7aをくわえ込むコレット部11を設ける。

【0023】ここにおけるこのコレット部11は、円筒状部材の下端部分で、周方向に間隔をおいて軸線方向に延びる複数本のスリットで区画したそれぞれの弾性片11aと、各弾性片11aの内周面に形成した、大径部分7aの受容部11bとからなり、このようにして区画されたそれぞれの弾性片7aは、スリープ8からその下方への突出姿勢で拡径方向へ弹性復帰する。

【0024】かくしてここでは、先端に大径部分7aを有する突起7と、スリープ8内で摺動変位する摺動ロッド9と、この摺動ロッド9の下端部に設けたコレット部11とによって連結手段5が構成されることになる。

【0025】かかる連結手段5による一対のリング3, 4の相互連結に当っては、ブッシャ等をもって、摺動ロッド9を、図3に示すように、コイルばね10のばね力に抗して下降変位させて、コレット部11のそれぞれの弾性片11aをスリープ8の下方側へ突出させ、これによつて、それぞれの弾性片11aを拡径変形させた状態で、上側のリング3を組合せ構体2に掛けさせることにより、突起7の大径部分7aを、弾性片11aの内周側へ円滑にかつ確実に入り込ませることができる。そしてその後は、ブッシャ等を摺動ロッド9から離隔させることによって、その摺動ロッド9を、コイルばね10のばね力に基いて上昇変位させ、これにより、それぞれの弾性片11aをスリープ8内へ引き込むことで、拡径状態のそれらの弾性片11aを、スリープ内周面の作用下で縮径変形させて、受容部11bによる突起大径部分7aの強固なくわえ込みわもたらし、これらによって両リング3, 4の相互連結を実現する。

【0026】ここで弾性片受容部11bによる大径部分7aのこのようなくわえ込み状態にあっては、摺動ロッド9および突起7のそれぞれは、コイルばね10の復元力に基く一定の引張力を受け、その引張力が両リング3, 4の引寄せ力ないしは連結力として作用することになる。従ってここでは、かかるくわえ込み状態が維持される限りにおいて、リング連結力の不測の低下が生ずることはなく、また、両リング3, 4の相互連結を、常に所定のくわえ込み状態をもつて実現することで、リング連結力にばらつきが生ずることもない。しかも、このようなくわえ込み状態にあっては、先に述べたような材質の選択に基づいて、コアの熱膨張に起因するリング連結力の変動を十分に防止することができる。

【0027】この一方で、それぞれのリング3, 4の連結の解除は、図2に示すようなそれらの連結状態で、これもまた図示しないブッシャ等をもって、摺動ロッド9を下降変位させ、これにともなって、コレット部11の

7
それらの弾性片11aを、図3に示すように、スリープ8の下方へ突出させるとともに、それらを拡径状態に弾性復帰させることにより行うことができる。従ってその後は、たとえば、摺動ロッド9の下降変位状態を保ったまま、リング3、4を組合せ構体2から離隔させることで、その組合せ構体2をリング3、4による拘束から完全に解放することができる。

【0028】かくして、このコアによれば、往復運動のみを行う、小型にして簡単なプッシャ機構等を用いるだけで対をなすリング3、4の相互連結およびその解除を、常に円滑にかつ確実に行うことができる。

【0029】図4は、対をなすそれぞれのリング3、4の上述のような相互連結およびその解除の自動化に供し得る装置を例示する略線断面図であり、図中21はホルダを示す。このホルダ21は、コアそれ自体を直接的に保持する場合および、図示のように、加硫済みタイヤTに内包されたコアを間接的に保持する場合のいずれにも適用することができ、このホルダ21は、コアをその下側から支持するとともに、その周面を保持すべく機能し、好ましくは、中心軸線の周りに所要に応じて回動することができ、また直動ガイド22の作用下で、図4の紙面と直交する方向へ所要に応じて進退変位することができる。また図中23は、上側リング3を吊持搬送するリング移送手段を、24は、下側リング4の把持および支持を行うリングホルダをそれぞれ示す。

【0030】ここで、リング移送手段23は、シリンドラ25と、それにて進退駆動されるプッシャ26とからなって、前記摺動ロッド9の下降変位をもたらすプッシャ機構部を周方向の複数個所に具えるとともに、他のシリンドラ27と、それにて摺動変位されて上側リング3の下面に掛合する摺動爪28とからなる支持機構部を周方向の複数個所に具え、また、リングホルダ24は、シリンドラ29によって昇降変位される支持プレート30と、この支持プレート上に配置され、リング4の中央穴域でモータ駆動されるピニオン31と、このピニオン31との噛合下で、リング4の厚みより高いレベルにて、図5に示すように、先端部がリング4にかかる位置と外れる位置との間で回動変位されるリング把持爪32とを具える。

【0031】このような装置によって、組付け状態にあるコアから上下の両リングを取り外す場合には、図4に下すように、リング移送手段23を下降させて、その摺動爪28をリング3の下面に掛合させて、摺動爪28によるリング3の支持を可能とする一方で、リングホルダ24の支持プレート30を図の実線位置まで上昇変位させるとともに、ピニオン31をもって、把持爪32を、それがリング4の上面へ突出する図5の実線姿勢とする。

【0032】次いで、リング移送手段23のシリンドラ25によってプッシャ26を進出変位させ、こりにより、

摺動ロッド9をコイルばね10のね力に抗して下降させて、先に述べたように、コレット部11、ひいては、それの弾性片11aの、スリープ8の下方への突出をもたらし、これに基いて、それぞれの弾性片11aを拡径変形させて、その受容部11bから突起7の大径部分7aを解放することで、両リング3、4の連結を解除する。

【0033】その後は、プッシャ26の進出姿勢を維持しつつ、摺動爪28をもってリング3を上昇変位させ、併せて、支持プレート30とともにリング4を下降変位させることによって、それぞれのリング3、4を、セグメント組合せ構体2との掛合を解いて相互に十分に離隔させる。このようにして相互に分離されたそれぞれのリング3、4は、所要位置へ搬送されて、または、所要の機構部に引き渡されて、事後的な再度の相互連結を待機する。

【0034】従って、その後にホルダ21に残留する組合せ構体2は、それぞれのセグメント1a、1bの所要に応じた半径方向内方への抜し出しが、それらのそれぞれの上方もしくは下方側への一個ずつの取り出しをもって、加硫済みタイヤTから分解されて取り出される。

【0035】これに対し、図示の装置をもって両リング3、4の相互連結をもたらす場合には、それぞれのセグメント1a、1bを予め整列させて配置した組合せ構体2に対し、たとえば、リングホルダ24によって把持および支持した下側のリング4を、図に実線で示すように、その下面側から掛合させた状態で、リング移送手段23にて支持した上側リング3を、プッシャ26の進出下で、コレット部11をスリープ8の下方側へ突出させた姿勢のまま下降変位させることにより、そのリング3を、組合せ構体2にその上面側から掛合させるとともに、下側リング4に設けた突起大径部分7aの、そのコレット部11への入り込みをもたらし、次いで、プッシャ26を後退させて、摺動ロッド9のコレット部11を、コイルばね10のね力によってスリープ8内へ引き込むことで、弾性片受容部11bによる突起大径部分7aのくわえ込みをもたらして、両リング3、4を相互連結する。

【0036】一対のリング3、4をこのように連結した後は、リング移送手段23およびリングホルダ24のそれぞれを、それらのリング3、4から離隔させることで、リング3、4の相互連結をもって組付けを完了したコアを、所要の待機位置または使用位置へ移送することができる。

【0037】かくして、このコア構造によれば、コアの組付けおよび分解作業のそれぞれ、とくには、リング3、4の連結および解離作業を、簡単にして小型の機構をもって自動化することができる他、前述したように、一对のリング3、4の連結力の不測の低下、その連結力

のばらつき等の発生を十分に防止することができ、また、コアの熱膨張に起因するリング連結力の変動を有利に防止することができる。

【0038】ところで、以上に述べたところでは、コレット部11の弾性片11aを、それらがスリーブ8から突出することにともなって拡径方向へ弾性復帰するものとしたが、それぞれの弾性片11aを、スリーブ8に対する相互姿勢のいかんにかかわらず縮径方向へ弾性復帰させることもでき、これによれば、図6(a)に示すように、スリーブ8からの突出姿勢で縮径状態にある弾性片11aを、上側リング3の下降変位に伴って、図6(b)に示すように、突起大径部分7aをもって強制的に拡径変形せるとともに、リング3のさらなる下降によって大径部分7aが受容部11bに達したときに弾性片11aの再度の縮径復帰をもたらし、その後は、その縮径状態を保ったまま、弾性片11aを、図6(c)に示すようにスリーブ8内へ引き込んで、弾性片11aの不測の拡径変形を拘束することで両リングの、円滑にして確実な相互連結を実現することができる。

【0039】この一方で、かかる相互連結の解除は、受容部11b内の大径部分7aを、弾性片11aのスリーブ8からの突出下で、その弾性片11aの、図6(b)に示すような強制変形を経てそこから引き抜くことにより行うことができ、それによってもまた、先の場合と同様の作用効果をもたらすことができる。

【0040】

【発明の効果】以上に述べたところから明らかなように、この発明によれば、コアの組付けおよび分解作業、なかでも、一対のリングの相互連結および解離作業の自動化を、簡単にして小型の機構をもって実現することができ、しかも、両リングの連結力の不測の低下、その連結力の、連結毎のばらつき等の発生を十分に防止することができ、併せて、コアの熱膨張に起因するリング連結力の変動を有効に防止することができる。

【図面の簡単な説明】

【図1】この発明の実施の形態を示す断面斜視図である

る。

【図2】図1の要部拡大図である。

【図3】コレット部のスリーブからの突出状態を示す、図2と同様の図である。

【図4】リングの連結・解離装置を例示する略線断面図である。

【図5】リング把持爪の作用を示す平面図である。

【図6】弾性爪の他の態様を示す説明図である。

【図7】従来技術を示す平面図である。

【図8】従来技術を示す断面図である。

【符号の説明】

1a, 1b セグメント

2 組立て構体

3, 4 リング

3a, 4a 突条

5 連結手段

6a, 6b 条溝

7 突起

7a 大径部分

8 スリーブ

9 摺動ロッド

10 コイルばね

11 コレット部

11a 弾性片

11b 受容部

21 ホルダ

22 直動ガイド

23 リング移送手段

24 リングホルダ

25, 27, 29 シリンダ

26 ブッシャ

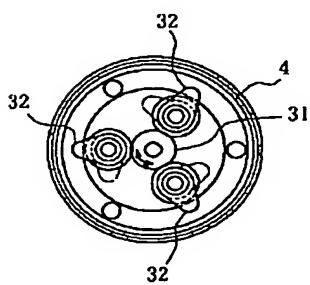
28 携動爪

30 支持プレート

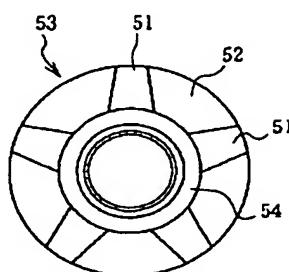
31 ピニオン

32 リング把持爪

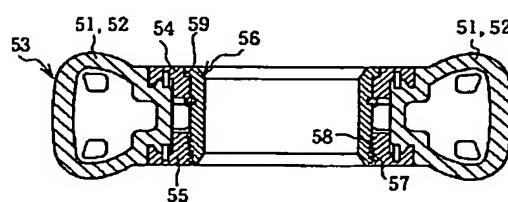
【図5】



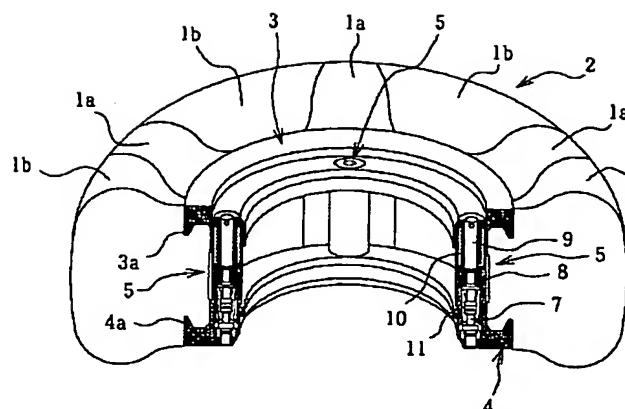
【図7】



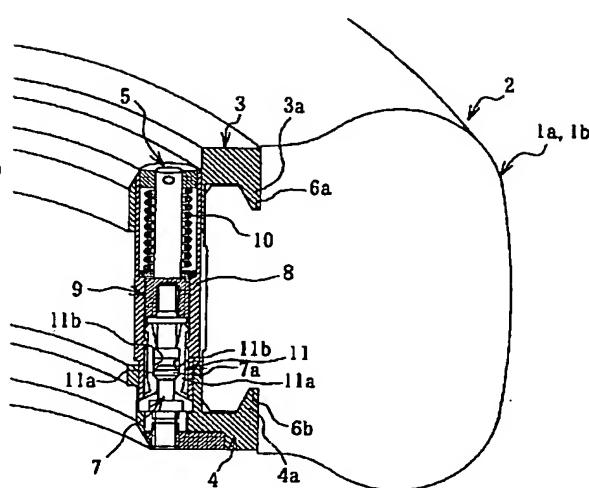
【図8】



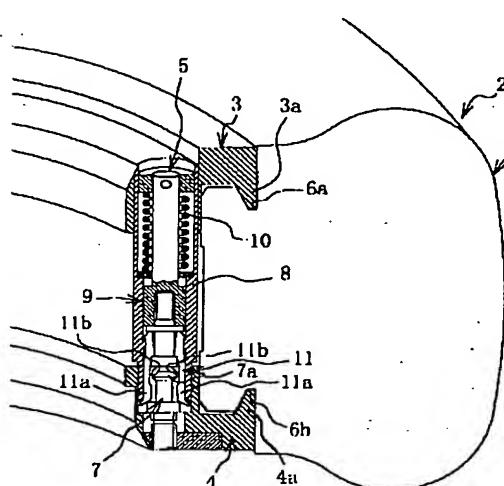
【图 1】



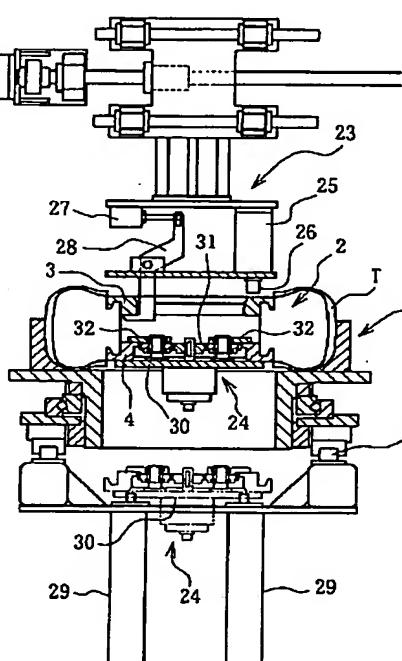
【2】



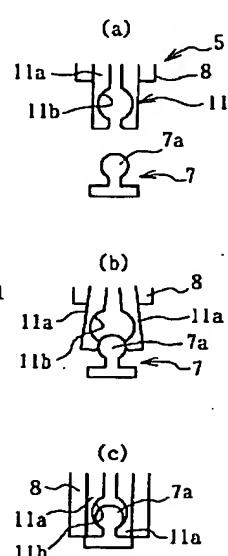
【图3】



[4]



[图 6]



フロントページの続き

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